

ABSTRACT

SELF-ALIGNED VOID FILLING FOR MUSHROOMED PLATING

A first embodiment of the mushroom plating process of the present invention starts with an overplated component which includes an enlarged mushroom head having outer portions which overhang a resist layer. The next step in the first process embodiment is a heating step in which the resist layer is hard baked. Thereafter, using a dry etch process, such as a reactive ion etch (RIE) process, the hard baked resist layer is removed in all areas except beneath the overhang of the mushroom head. The area beneath the overhang thereby remains filled with hard baked resist. Thereafter, the device is ultimately encapsulated such that no voids and/or redeposition problems exist under the overhang due to the presence of the hard baked resist. In an alternative process embodiment of the present invention the dry etch process is conducted first upon the resist layer, such that the resist layer is removed in all areas except under the overhang. Thereafter, the device is baked, such that hard baked resist remains beneath the overhang. Ultimately, the device is encapsulated and no voids or redeposition problems exist beneath the overhang due to the presence of the hard baked resist. Devices that are manufactured utilizing the processes of the present invention are also included within the invention. While not intended to be limiting in any manner, one such device is a thin film magnetic head wherein the yoke portion of a magnetic pole is formed utilizing the mushroom plating techniques of the present invention. Another mushroom plated component found in many devices is a mushroom plated electrical interconnecting stud that is formed utilizing the process steps of the present invention.